What is claimed is:

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1. A spectroscope comprising:

an entrance aperture member for passing a light;

a first optical system which collimates a dispersing light which is emitted from the entrance aperture member into an approximate collimated light flux;

a dispersing element which is disposed so as to freely rotate for dispersing the approximate collimated light flux;

a second optical system for condensing the light flux which is dispersed by the
dispersing element near a focal plane;

a variable-width slit having a variable slit-width which is disposed near the focal plane; and

an optical detector for detecting a light flux which passes the variable-width slit among the dispersed light flux according to the slit-width of the variable-width slit or the rotation of the dispersing element.

- 2. A spectroscope according to Claim 1 wherein aberrations for a plurality of wavelengths of an off-axial light flux are compensated in the second optical system.
- A spectroscope according to Claim 2 wherein the second optical system comprises a plurality of lenses.
 - 4. A spectroscope according to Claim 2 wherein:

the second optical system comprises at least a lens having a positive focal length and at least a lens having a negative focal length; and a relationship such as $v_+ - v_- > 25$ is effective under condition that v_+ indicates an Abbe number for the lens having a positive focal length and v_- indicates an Abbe number for the lens having a negative focal length.

5 5. A spectroscope according to Claim 4 wherein the dispersing element is a reflective plane grating satisfies a relationship such as

$$0 < \frac{2.44\cos\alpha}{NmD} < 0. \quad 0.4$$

under condition that a indicates an incident angle of a light flux which is incident to the reflective plane grating, N indicates grooves per a unit length of the reflective plane grating, m indicates a diffraction order, and D indicates a diameter of the light flux which passes through the first optical system.

- 6. A spectroscope according to Claim 5 wherein the first optical system comprises a first lens group having a negative focal length and a second lens group having a positive focal length.
- 7. A spectroscope according to Claim 2 wherein:

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the dispersing element is a reflective plane grating;

the optical detector detects a light flux having a desirable wavelength selectively by rotating the reflective plane grating and changing the width of the slit of the variable-width slit.

8. A spectroscope according to Claim 2 wherein the optical detector detects a light flux having a desirable wavelength selectively by changing the slit width of the

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variable-width slit under condition that a prism is used for a fixed dispersing element.

9. A laser scanning microscope comprising:

a light source;

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an objective lens which condenses a light which is emitted from the light source on a sample;

a light condensing optical system which condenses a light which is reflected by the sample or a light which is emitted from the sample;

an aperture member which is disposed at a focal point in the light condensing optical system so as to be optically conjugate with the sample;

a first optical system which collimates the dispersed light which is emitted from the aperture member into an approximate parallel light;

a dispersing element which is disposed so as to freely rotate for dispersing the approximate parallel light flux;

a second optical system which condenses the light flux which is dispersed by the dispersing element near the focal plane;

a variable-width slit which is disposed near the focal plane of which slit width is variable; and

an optical detector which detects the light flux which passes through the variable-width slit among the dispersed light fluxes according to the width of the slit or the rotation of the dispersing element.

10. A laser scanning microscope according to Claim 9 wherein the aperture member has an aperture which is formed as a pinhole.

- 11. A laser scanning microscope according to Claim 10 wherein aberrations for a plurality of wavelengths of an off-axial light flux are compensated in the second optical system.
- 5 12. A laser scanning microscope according to Claim 12 wherein the second optical system comprises a plurality of lenses.
 - 13. A laser scanning microscope according to Claim 12 wherein:

the second optical system comprises at least a lens having a positive focal length and at least a lens having a negative focal length; and

a relationship such as $v_+ - v_- > 25$ is effective under condition that v_+ indicates an Abbe number for the lens having a positive focal length and v_- indicates an Abbe number for the lens having a negative focal length.

15 14. A laser scanning microscope according to Claim 13 wherein the dispersing element is a reflective plane grating satisfies a relationship such as

$$0 < \frac{2.44\cos\alpha}{NmD} < 0. \quad 0.4$$

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under condition that a indicates an incident angle of a light flux which is incident to the reflective plane grating, N indicates grooves per a unit length of the reflective plane grating, m indicates a diffraction order, and D indicates a diameter of the light flux which passes through the first optical system.

15. A laser scanning microscope according to Claim 14 wherein the first optical system comprises a first lens group having a negative focal length and a second lens group

having a positive focal length.

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16. A laser scanning microscope according to Claim 11 wherein:

the dispersing element is a reflective plane grating;

the optical detector detects a light flux having a desirable wavelength selectively by rotating the reflective plane grating and changing the width of the slit of the variable-width slit.

- 17. A laser scanning microscope according to Claim 11 wherein the optical detector detects a light flux having a desirable wavelength selectively by changing the slit width of the variable-width slit under condition that a prism is used for a fixed dispersing element.
 - 18. A laser scanning microscope according to Claim 11 wherein:

a single mode fiber is disposed so as to have an incident end of the single mode fiber is disposed instead of the aperture member.

19. A confocal optical system comprising:

a light source;

an objective lens which condenses a light which is emitted from the light source on a sample;

a light condensing optical system which condenses a light which is reflected by the sample or a light which is emitted from the sample;

an aperture member which is disposed at a focal point in the light condensing optical system so as to be optically conjugate with the sample;

a first optical system which collimates the dispersed light which is emitted from the aperture member into an approximate parallel light;

a dispersing element which is disposed so as to freely rotate for dispersing the approximate parallel light flux;

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a second optical system which condenses the light flux which is dispersed by the dispersing element near the focal plane;

a variable-width slit which is disposed near the focal plane of which slit width is variable; and

an optical detector which detects the light flux which passes through the variable-width slit among the dispersed light fluxes according to the width of the slit or the rotation of the dispersing element.

- 20. A laser scanning microscope according to Claim 9 wherein a relationship such as $\Delta\lambda < 20$ nm is effective under condition that $\Delta\lambda$ indicates a wavelength resolution for separating a light having a wavelength λ from a light having a wavelength ($\lambda+\Delta\lambda$).
- 21. A laser scanning microscope according to Claim 9 wherein a relationship such as $\Delta\lambda < 5$ nm is effective under condition that $\Delta\lambda$ indicates a wavelength resolution for separating a light having a wavelength λ from a light having a wavelength $(\lambda + \Delta\lambda)$.